



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,537	07/29/2003	Ray F. Campbell	BOE 0314 PA	1536

27256 7590 08/10/2005

ARTZ & ARTZ, P.C.
28333 TELEGRAPH RD.
SUITE 250
SOUTHFIELD, MI 48034

EXAMINER

BELLAMY, TAMIKO D

ART UNIT	PAPER NUMBER
----------	--------------

2856

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/604,537		CAMPBELL ET AL.	
	Examiner		Art Unit	
	Tamiko D. Bellamy		2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8 and 12-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8 and 12-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **generating a voltage differential signal** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Art Unit: 2856

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **gain adjusting** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
Appropriate correction is required.

- a. Par. 37, line 4, change "deither" to -- d either--.

Claim Objections

4. Claim 1 is objected to because of the following informalities:

- a. Claim 1, line 14, change the word "scales" to –scaled –.

Appropriate correction is required.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, and 4-8, 12-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-7, and 9-20 of U.S. Patent No. 6,901,801. Although the conflicting claims are not identical, they are not patentably distinct from each other because the conflicting claims contain all the limitations of the pending application.

Re claim 1, patent '801, discloses in claims 1, 3 and 4, a housing, a fixed plate, and a movable plate (e.g., flexure plate) parallel relation to the fixed plate. The patent '801 discloses a transimpedance amplifier, an analog-to-digital converter receiving signals from a voltage signal, and a time integrator integrating the digital voltage signal.

Re claim 4, patent '801 discloses in claim 5, a linearizer receiving the integrated signal and generating therefrom a linearized acceleration signal.

Re claim 5, patent '801 discloses in claim 6, a linearizer comprising a linear lookup table.

Re claim 6, patent '801 discloses in claim 7, an actuator activating a system component in response to a system control system.; and a processor receiving the linearized acceleration signal.

Re claim 7, patent '801 discloses in claim 4, a flexure plate that is equivalent to a flexure diaphragm, flexible beam.

Re claim 8, patent '801 discloses in claims 9-12, accelerating the movable plate (e.g., flexure plate); generating a variable capacitor; and generating a scaled voltage signal. Patent '801 discloses generating acceleration signal in response to the scaled voltage, wherein generating the acceleration signal further composes gain adjusting the scaled voltage signal and generating a voltage differential signal therefrom. Patent '801 discloses in claims 9-12, generating an integrated voltage signal in response to initialization parameters and integrating the digital voltage signal.

Re claim 12, patent '801 discloses in claims 9-13, linearlizing parameters and integrating the digital voltage signal.

Re claim 13, patent '801 discloses in claims 9-14, filtering the linearized and generating the acceleration signal therefrom.

Re claim 14, patent '801 discloses in claims 9-15, activating the object in response to the acceleration signal.

Re claim 15, patent '801 discloses in claim 16, a platform, a first accelerometer coupled to the platform, a first fixed plate coupled to the housing. Patent '801, discloses in claim 16, a movable plate (e.g., flexure plate); and a transimpedance amplifier receiving a charge displacement; and a time integrator integrating the digital voltage signal; a linearizer receiving the integrated signal; and a processor coupled to the accelerometer.

Re claim 16, patent '801 discloses in claim 17, a control device activating in response to the system control signal, said object control device comprising at least one of a thruster, an amplitude control device, a missile steering nozzle, or a vane actuator.

Re claim 17, patent '801 discloses in claim 18, a second accelerometer coupled to the platform.

Re claim 18, patent '801 discloses in claim 19, a second and third accelerometer arranged with a first accelerometer to receive cross axis thrust data.

Re claim 19, patent '801 discloses in claim 20, a serial data bus receiving acceleration signals.

Re claim 20, patent '801 discloses in claim 16, a flexure plate that is equivalent to a flexure diaphragm, flexible beam.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 2856

8. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The word “differential” is disclosed in the background of the specification. However, the word “differential” is not disclosed in the **summery of the invention or the detail description portion of the specification.**

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 8 recites the limitation "differential" in line 10. There is insufficient antecedent basis for this limitation in the claim. The word “differential” is disclosed in the background of the specification. However, the word “differential” is not disclosed in the **summery of the invention or the detail description portion of the specification.**

11. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are:

- a. generating a second variable capacitor signal.
- b. generating a second scaled voltage in response to said second variable capacitor signal.

12. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the

Art Unit: 2856

invention. The words "gain adjusting" are vague and unclear. It is not clear as to whether the **gain adjusting** is an extra component. After the step of generating a scaled voltage, is the applicant using an extra component, to perform the step of **gain adjusting**?

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 1, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Seeters (5,283,528) in view of Watson (5,146,417).

Re to claim 1, the preamble containing the phrase "single plate capacitor" which is not considered a limitation (See MPEP 2111.02). van Seeters discloses a fixed plate (11) within the housing (7,8). van Seeters discloses a movable plate (e.g. capacitive plate 15) parallel to fixed plate (20); and the movable plate (e.g., capacitive plate 15) is coupled to the housing (7,8) along at least one edge (e.g. spacing ring 9). van Seeters discloses a transimpedance amplifier (3) receiving the charge displacement capacitance signal (col. 5, lines 1-9). As depicted in fig. 1, van Seeters discloses an analog-to-digital (5) converter for receiving the scaled voltage signal (Col. 3, lines 15-16). van Seeters lacks the detail of a time integrator for integrating a digital voltage signal. Watson

discloses in fig. 1, a time integrator receiving the digital voltage signal in response to initialization parameters and generating an integrated signal therefrom (Cols. 1-6). Therefore, to modify van Seeters by employing a time integrator would have been obvious to one of ordinary skill in the art at the time of the invention since Watson teaches an apparatus having these design characteristics. The skilled artisan would be motivated to combine the teachings of van Seeters and Watson since van Seeters states that his invention is applicable to an inclination or acceleration sensor (See Col. 6, lines 51-52) and Watson is directed to accelerometers used for inertial measurement (Col. 1, lines 13-20).

Re claim 7, as depicted in fig. 3, van Seeters discloses a movable plate (e.g., capacitive plate 9) that is supported by a sprung diaphragm (14) (Col. 6, lines 62-63), which is equivalent to a flexible diaphragm.

Re to claim 8, the preamble containing the phrase "single plate capacitor" which is not considered a limitation (See MPEP 2111.02). van Seeters discloses accelerating the movable plate (e.g. capacitive plate 15), thereby causing a distance between the movable plate (e.g., capacitive plate 15) and the fixed plate (20).generating a scaled voltage signal and generating a voltage differential signal. van Seeters lacks the detail of an integrator for integrating a digital voltage signal. Watson discloses in fig. 1, a time integrator receiving the digital voltage signal in response to initialization parameters and generating an integrated signal therefrom (Cols. 1-6). Therefore, to modify van Seeters by employing a time integrator would have been obvious to one of ordinary skill in the art at the time of the invention since Watson teaches an apparatus having these design

Art Unit: 2856

characteristics. The skilled artisan would be motivated to combine the teachings of van Seeters and Watson since van Seeters states that his invention is applicable to an inclination or acceleration sensor (See Col. 6, lines 51-52) and Watson is directed to accelerometers used for inertial measurement (Col. 1, lines 13-20).

15. Claims 4-6, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Seeters (5,283,528) in view of Watson (5,146,417) as applied to claims 1, 7, and 8 above, and further in view of Gale et al (4,912,397).

Re claims 4 and 12, the combination of van Seeters and Watson discloses a time integrating a digital voltage signal in response to initialization parameters and generating an integrated signal. The combination of van Seeters and Watson lacks the detail of linearizing the integrated signal and generating a linearized acceleration signal. Gale et al. discloses linearizing the output of a transducer. Therefore, to modify the combination of van Seeters and Watson by employing linearizing an integrated signal would have been obvious to one of ordinary skill in the art at the time of the invention since Gale et al. teaches a device having these design characteristics. The skilled artisan would be motivated to combine the teachings of combination of van Seeters and Watson and Gale et al. since the combination of van Seeters and Watson states that the invention is applicable to an acceleration sensor and Gale is directed to linearizing the output of an acceleration transducer (See Col. 2, lines 41-52).

Re claim 5, the combination of van Seeters and Watson discloses a time integrating a digital voltage signal in response to initialization parameters and generating

an integrated signal. The combination of van Seeters and Watson lacks the detail of a linearizer comprising a linear look-up table. Gale et al. discloses a linearer look-up table (e.g., storage means 4) (Col. 5, lines 15-21). Therefore, to modify the combination of van Seeters and Watson by employing a linearizer comprising a look-up table would have been obvious to one of ordinary skill in the art at the time of the invention since Gale et al. teaches a device having theses design characteristics. The skilled artisan would be motivated to combine the teachings of combination of van Seeters and Watson and Gale et al. since the combination of van Seeters and Watson states that the invention is applicable to an acceleration sensor and Gale is directed to linearizing the output of an acceleration transducer (See Col. 2, lines 41-52).

Re claim 6, the combination of van Seeters and Watson disclose an actuator for activating the system and a processor receiving an acceleration signal. The combination of van Seeters and Watson lacks the detail of the process receiving a linearized acceleration signal. Gale et al. discloses a linearizing an acceleration. Therefore, to modify the combination of van Seeters and Watson by employing a linearizing an acceleration signal would have been obvious to one of ordinary skill in the art at the time of the invention since Gale et al. teaches a device having theses design characteristics. The skilled artisan would be motivated to combine the teachings of combination of van Seeters and Watson and Gale et al. since the combination of van Seeters and Watson states that the invention is applicable to an acceleration sensor and Gale is directed to linearizing the output of an acceleration transducer (See Col. 2, lines 41-52).

Re claim 13, the combination of van Seeters and Watson discloses a time integrating a digital voltage signal in response to initialization parameters and generating an integrated signal. The combination of van Seeters and Watson lacks the detail of filtering the linearized signal and generating an acceleration signal therefrom. Gale et al. discloses filtering the linearized signal. Therefore, to modify the combination of van Seeters and Watson by employing a linearizer comprising a look-up table would have been obvious to one of ordinary skill in the art at the time of the invention since Gale et al. teaches a device having these design characteristics. The skilled artisan would be motivated to combine the teachings of combination of van Seeters and Watson and Gale et al. since the combination of van Seeters and Watson states that the invention is applicable to an acceleration sensor and Gale is directed to linearizing the output of an acceleration transducer (See Col. 2, lines 41-52).

Re claim 14, the combination of van Seeters and Watson disclose an actuator for activating the system and a processor receiving an acceleration signal.

16. Claims 15-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over van Seeters (5,283,528) in view of Watson (5,146,417), and further in view of Gale et al (4,912,397).

Re to claim 15, the preamble containing the phrase "single plate capacitor" which is not considered a limitation (See MPEP 2111.02). van Seeters discloses a fixed plate (11) within the housing (7,8). van Seeters discloses a movable plate (e.g. capacitive plate 15) parallel to fixed plate (20); and the movable plate (e.g., capacitive plate 15) is coupled to the housing (7,8) along at least one edge (e.g. spacing ring 9). van Seeters discloses a transimpedance amplifier (3) receiving the charge displacement capacitance

signal (col. 5, lines 1-9). As depicted in fig. 1, van Seeters discloses an analog-to-digital (5) converter for receiving the scaled voltage signal (Col. 3, lines 15-16). van Seeters **lacks the detail of a time integrator for integrating a digital voltage signal, and a linearizer.** Watson discloses in fig. 1, a time integrator receiving the digital voltage signal in response to initialization parameters and generating an integrated signal therefrom (Cols. 1-6). Therefore, to modify van Seeters by employing a time integrator would have been obvious to one of ordinary skill in the art at the time of the invention since Watson teaches an apparatus having these design characteristics. The skilled artisan would be motivated to combine the teachings of van Seeters and Watson since van Seeters states that his invention is applicable to an inclination or acceleration sensor (See Col. 6, lines 51-52) and Watson is directed to accelerometers used for inertial measurement (Col. 1, lines 13-20). The combination of van Seeters and Watson lacks the detail of **linearizing the integrated signal and generating a linearized acceleration signal.** Gale et al. discloses linearizing the output of a transducer. Therefore, to modify the combination of van Seeters and Watson by employing linearizing an integrated signal would have been obvious to one of ordinary skill in the art at the time of the invention since Gale et al. teaches a device having these design characteristics. The skilled artisan would be motivated to combine the teachings of combination of van Seeters and Watson and Gale et al. since the combination of van Seeters and Watson states that the invention is applicable to an acceleration sensor and Gale is directed to linearizing the output of an acceleration transducer (See Col. 2, lines 41-52).

Re claim 16, although the combination of van Seeters, Watson, and Gale et al. do not explicitly suggest the system component as a thruster, an amplitude control device, a missile steering nozzle, or a vane actuator, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have readily recognize the advantages and desirability of using different system components without departing from the scope of the invention, namely to measure acceleration.

Re claims 17-19, the references do not teach a second and third accelerometer. However, this mere design expedient to an artisan in the art to have duplicate the accelerometer and have each of the accelerometers in communication with one another (Note St. Regis Paper Co. V. Bemis Co., Inc., 193 USPQ 8, 11 (7th /Cir. 1977)).

Re claim 20, as depicted in fig. 3, van Seeters discloses a movable plate (e.g., capacitive plate 9) that is supported by a sprung diaphragm (14) (Col. 6, lines 62-63), which is equivalent to a flexible diaphragm.

Response to Remarks

17. Applicant's arguments with respect to claims 1-2, and 7-10 have been considered but are moot in view of the new ground(s) of rejection. It is the examiners position that claims 1, 7, and 8 are not allowable over van Seeters, or over the newly applied art of Watson (5,146,417). It is the examiners position that claims 4-6, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Seeters (5,283,528) in view of Watson (5,146,417) as applied to claims 1, 7, and 8 above, and further in view of Gale et al (4,912,397).

Art Unit: 2856

18. The indicated **allowability of claims 15-20 is withdrawn** in view of the newly discovered reference(s) to Seeters (5,283,528) in view of Watson (5,146,417), and further in view of Gale et al (4,912,397). Rejections based on the newly cited reference(s) follow.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamiko D. Bellamy whose telephone number is (571) 272-2190. The examiner can normally be reached on Monday - Friday 7:30 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tamiko Bellamy

T. B.
August 1, 2005

Application/Control Number: 10/604,537
Art Unit: 2856

Page 16

A handwritten signature in black ink, appearing to read "Hezron A. Williams", with a long horizontal flourish extending to the right.

HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800